Bioremediation of Toxaphene-Contaminated Soil

Harry L. Allen
Environmental Scientist
U.S. EPA Environmental Response Team
(732) 321-6747
allen.harry@epa.gov

Authors: Harry L. Allen[1], Joe Schaefer[1], Thomas Ferrell Miller[2]
[1]U.S. EPA Environmental Response Team
[2]Lockheed-Martin

Keywords: pesticide, bioremediation, toxaphene, technology, tribe

For many years, the pesticide toxaphene was used to control ticks on livestock in the American Southwest and to control weevils in cotton fields throughout the South. In many of these areas, soil residues exceeded acceptable levels by the time the pesticide was banned by the U.S. Environmental Protection Agency (U.S. EPA). The Native Americans of the Navajo Nation became concerned and invited the U.S. EPA to assist them in developing and implementing a cost-effective solution. The U.S. EPA Environmental Response Team (ERT) developed and demonstrated the microbial degradation process of reductive dechlorination to bioremediate these soils at 22 Navajo chapters. Over the next decade, the ERT worked at pesticide-spraying sites and livestock-dipping sites in Florida, Arizona, and New Mexico to refine the process and make it more effective and cheaper. The Acoma, Zuni, and Pueblo Nations, and the Gila River Indian Community (Pima and Maricopa) participated in these efforts. The technology has been implemented successfully by Native Americans on their own and in consultation with the U.S. EPA. The Bureau of Indian Affairs has also struck out on its own, as have several private efforts, promoting its use. Presentations have been made in Thailand and Viet Nam in attempts to apply reductive dechlorination to pesticide problems in other countries. Development continues to improve the cost-effectiveness of bioremediation of toxaphene-contaminated sites.